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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/752,576 | 12/29/2000 | Manoj Khare | 42390P9874 | 1630 |

7590 06/04/2003

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER

HO, THANG H

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2188

DATE MAILED: 06/04/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,576

Applicant(s)

KHARE ET AL.

Examiner

Thang H Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/18/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/29/2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

1. The Oath/Declaration is missing for inventor Kenneth C. Creta. Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: (100) and (250). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamaguchi et al. (USPN: 5,737,568); hereinafter Hamaguchi;

Referring to claim 1, Hamaguchi discloses an invention to control cache coherency in multiprocessor system (figure 2) utilizing a shared memory (26) including receiving a request to read a modified cache line at the responding node (21) of a shared memory multiprocessor architecture from a requesting node (22) of the shared memory multiprocessor architecture; transmitting a response to the request by simultaneously instructing a switch coupled to the responding node (25), the requesting node (21) and a

home node (26), to update a memory at the home node with data read from the modified cache line and provide an answer to the requesting node, wherein the home node is different from the corresponding node (e.g. see figure 2, column 4, lines 12 et seq. and column 5, lines 1-18);

Referring to claim 2, Hamaguchi further discloses the answer containing a copy of the data read from the modified cache line (e.g. see column 5, lines 8 et seq.);

Referring to claim 3-4 and 7, and, Hamaguchi discloses the response containing the state transition of the modified cache line utilizing MESI protocol. Figure 7 shows the transition of the modified cache from a modified state (1) to an invalid state (2) and a modified cache from modified state (1) to a shared state (4);

Referring to claim 5-6, Hamaguchi discloses the updating of the memory at the home node and providing a completion response to the requesting node (e.g. see column 5, lines 7 et seq.);

Referring to claim 8, Hamaguchi discloses a shared memory multiprocessor system (figure 2) containing a plurality of node controllers (21-24) and a switch (25) coupled to each of the plurality of node controllers configured to transmit a read request regarding a modified cache line from a first node controller (21) of the plurality of node controllers through the switch to a second node controller (22) of the plurality node controllers, wherein the second node controller is distinct from the first node controller; and in response to receiving the read request regarding the modified cache line, the second node controller instructs the switch to update a home memory (23) residing

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exclusively on a third node controller of the plurality of node controllers (e.g. see columns 9 and 10);

Referring to claim 12, Hamaguchi discloses an implicit write-back, initiated by a responding node, in response to a read request directed to a modified cache line at the responding node (e.g. see column 6, lines 14-20);

Referring to claim 13, the implicit write-back including information causing a switch to answer the request and updating a home memory is taught by Hamaguchi (e.g. see figure 2, column 5, lines 4);

Referring to claim 14, the further limitation of the implicit write-back further includes information identifying the state information of the modified cache line is taught by Hamaguchi (e.g. see figure 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaguchi in view of Flynn et al. (USPN: 5,222,224); hereinafter Flynn.

The teachings of Hamaguchi has been discussed supra. Hamaguchi does not teach the usage of a switch or system control unit (SCU) for maintaining a presence vector containing the status of a cache line for each participating node controller of the plurality of node controllers, and whether the corresponding participating node controller

contains a copy of the contents stored in the home memory. Flynn teaches the usage of a centralize SCU to maintain a copy of cache directory as well as the presence vector of each processor caches (e.g. column 5, lines 14 et seq.). It would have been prima facie obvious to one skilled in the art at the time of the invention was made to implement a shared memory multiprocessor system as being taught by Hamaguchi and modify the invention to include a switch as taught by Flynn to improve data consistency between cache memories and the main memory, to speedup lookup time and to reduce bus requirements of each processor in a multiprocessor system.

7. Claims 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaguchi (USPN: 5,737,568).

The teachings of Hamaguchi has been discussed supra with respect to claims 1-7. Hamaguchi does not teach the usage of a computer readable medium of instructions to be implemented on a client computer as being claimed in claims 15-21. However, one of ordinary skill in the art would have recognized that computer readable medium (i.e., floppy, cd-rom, etc.) carrying computer-executable instructions for implementing a method, because it would facilitate the transporting and installing of the method on other systems, is notoriously well-known in the art. For example, a copy of the Microsoft Windows operating system can be found on a cd-rom from which Windows can be installed onto other systems, which is a lot easier than running a long cable or hand typing the software onto another system. Therefore, it would have been prima facie obvious to put Hamaguchi's program on a computer readable medium, because it would facilitate the transporting, installing and implementing of Hamaguchi's program on other systems.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

After-final (703) 746-7238

Official (703) 746-7239

Non-Official/Draft (703) 746-7240

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The examiner can normally be reached on Monday-Thursday from 7:00 A.M. - 4:30 P.M.. The examiner can also be reached on alternate Fridays;

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 703-305-3821.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

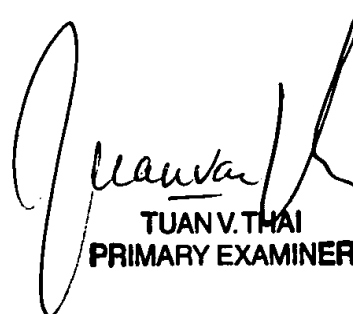
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May 29, 2003



TUAN V. THAI
PRIMARY EXAMINER